SIEMENS

MAMMOMAT 3000 Nova

SP

Installation

Installation Instructions

AEC upgrade kit for Fuji CR

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These instructions describe how to set up a Fuji CR Console for AEC Calibration and how to perform the calibration.

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Safety information

When carrying out the work steps and test, the product-specific safety information contained in this document, as well as the general safety information must be observed.

Important note

The figures in this document are based on software version A06 of the Fuji CR Console. User interface of later software versions might look different.

Components included

The AEC upgrade kit for Fuji CR (Siemens material No. 66 33 502) includes:

Quantity	Material No.	Name
1	66 01 897	AEC M3000 DIGISCAN M
1	66 33 510	AECImageExtract
1	30 77 740	Ethernet switch*
3	66 01 582	Ethernet cable
1	66 30 961	This document
1	66 33 536	Label
1	65 91 577	Barcode label
6	60 01 486	Floppy disk
1	61 62 411	Plastic folder

* 100-240 V~, 50-60 Hz. Delivered with power cord for Europe.

Tools, meters and appliances required

- Standard installation tool kit.
- Service PC network board, 10/100 Mbit/s, TCP/IP compatible.
- Operating system Windows2000.
- Connecting cable (PC - Generator), material No. 99 00 440 RE999.
- AEC calibration plexi:
  Three plates, 2 cm (material No. 65 61 232)
  One plate 1 cm (material No. 65 61 224)
- Ionization chamber and electrometer calibrated at the mammography x-ray beam energies thin enough to be placed in cassette compartment (material No. 97 17 612 or equivalent).

Time required

Approximately 8 hours for one Customer Support Engineer.

Prerequisites

MAMMOMAT

1. The installation of the Siemens MAMMOMAT must be completed.
2. For MAMMOMAT 3000 Nova with serial No. lower than 6850, upgrade with extended radiation field kit No. 64 83 551.
3. For MAMMOMAT 3000 Nova with serial No. lower than 7000, upgrade with AEC kit No. 65 52 819. If the AEC kit is installed directly before the prom kit No. 66 24 410, use proms from the prom kit if those are of higher version than the AEC proms.

   Prerequisites (installation kit no. 65 52 819):
   Depending on the serial number and/or version of the software of your MAMMOMAT, complementary measures may have to be taken. These measures are described below.
   - For MAMMOMAT 3000 with serial number lower than 2056:
   If not done previously; change the polarity of the stereo lever switch.
   - For MAMMOMAT 3000 with serial number lower than 3242:
   Make sure that the article no. of the PC board D702 is 64 21 288.
   - For MAMMOMAT 3000 software version lower than v1.5:
   Replace HSE detectors. The part no. of the HSE detectors must be 38 47 626.
   - For MAMMOMAT 3000 software version lower than v2.2:
   Calibrate the swivel-arm rotation.

NOTICE

The tables for Fuji CR HR-BD imaging plate in IP CASS-BD M will be installed on D and will overwrite existing tables.

Make sure that the correction tables for the film/screen combination are installed on H.

If more than one film/screen combination has been installed, one of them has to be removed.

Fuji equipment

Fuji FCR 5000 MA reader with Fuji CR Console with SW version A06 or higher.

The installation of the Fuji FCR 5000MA reader and the Fuji CR Console must be completed.

It is recommended that a Fuji service engineer is present during the installation.

Abbreviations

FCR	= Fuji Computed Radiography
IVK	= Installed Volume Component
IP	= Imaging Plate
LAN	= Local Area Network

Unpacking

Unpack the accessories from the box.

Setup

- Disconnect the network cables from the Fuji equipment. The original network connection shall be restored when the AEC calibration has been performed.
- Connect the MAMMOMAT, Fuji FCR 5000 MA reader, Fuji CR Console and service PC to the switch with the enclosed network cables (Siemens material No. 99 00 440) according to Fig. 1. Use the same network sockets on the Fuji equipment as before.
- Connect the switch to the incoming mains.
- Connect the service PC to the MAMMOMAT according to the MAMMOMAT's Technical Manual.

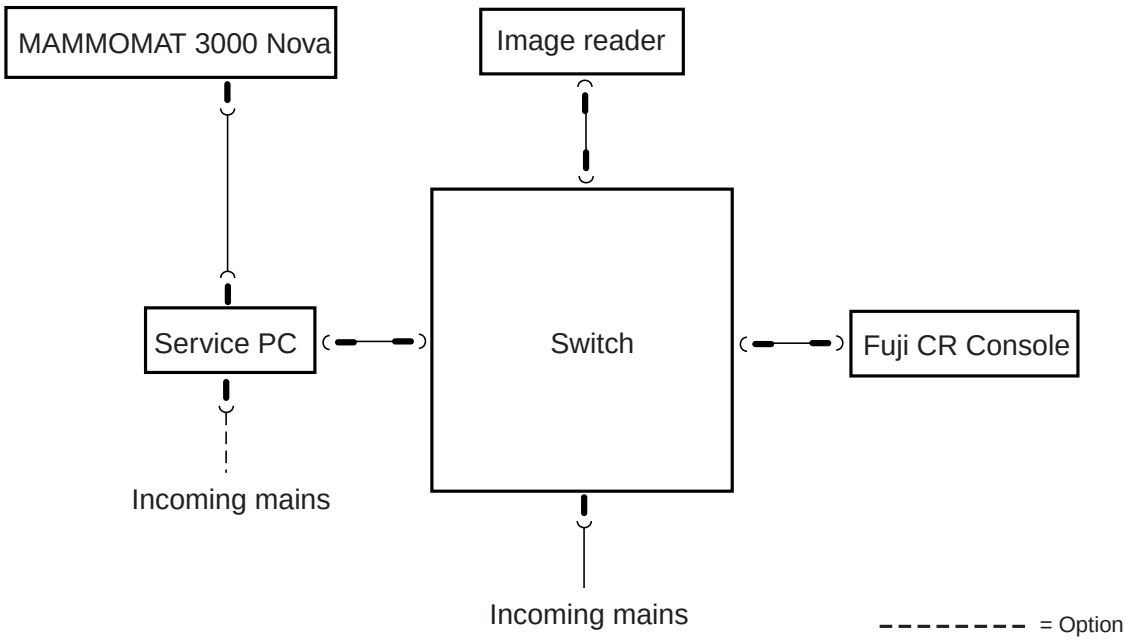

Fig. 1 Configuration

Remaining work steps

Remove and dispose of all packaging materials from the components.

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Starting up the image reader

1. Make sure that the power lamp on the operation panel lights green.
   If it is not lit, the image reader's circuit breaker has been turned OFF. Turn the circuit breaker back ON by turning it to the "I" side.

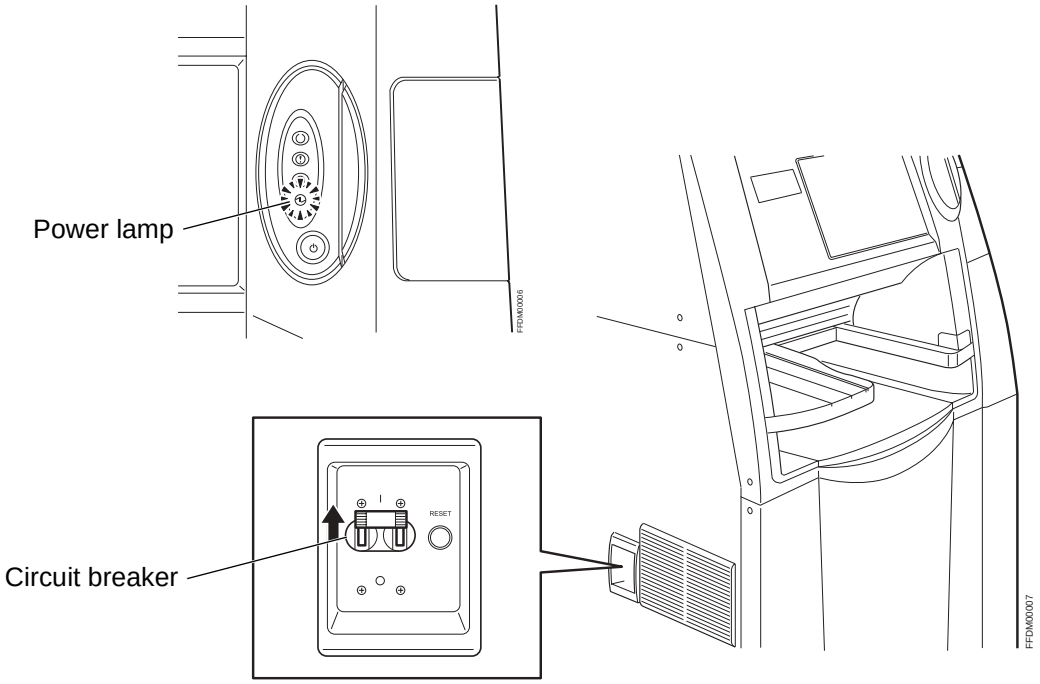

Fig. 1 Confirming that the power lamp has lit

2. Press the system power switch ON.

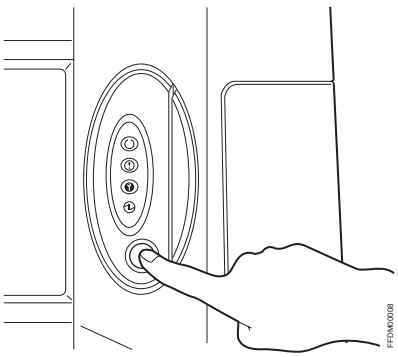

Fig. 2 System power switch ON

Erasing the IP cassette(s)

When conducting exposure with an IP that has been over exposed, the IP cassette must be subjected to secondary- and primary erasure processing.

1. Touch the processing mode switchover key and the processing selection screen will be displayed.

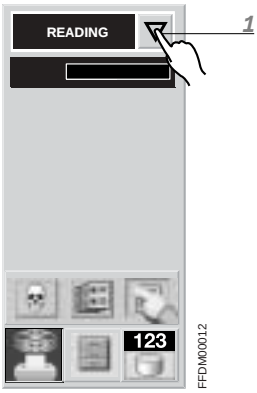

Fig. 3 Processing mode switchover key

2. Touch the secondary erasure key to select secondary erasure.

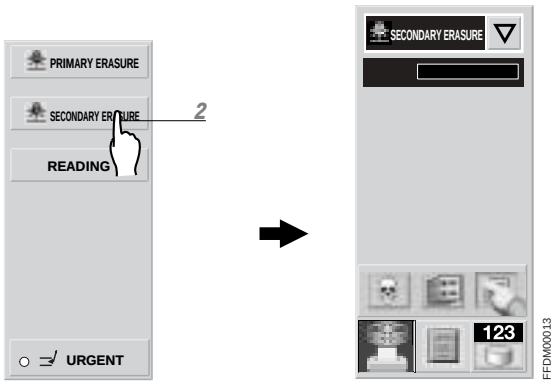

Fig. 4 Secondary erasure key

3. Secondary erasure processing has been selected for the cassette to be inserted. Insert the appropriate cassette in the cassette setting unit. The IP inside the cassette will be subjected to secondary erasure processing.
4. Touch the primary erasure key to select primary erasure.
5. Primary erasure processing has been selected for the cassette to be inserted. Insert the appropriate cassette in the cassette setting unit. The IP inside the cassette will be subjected to primary erasure processing.

Make a backup of the Fuji CR Console's original settings. The backup will be used to restore the Fuji CR Console's settings when the AEC calibration has been performed. The following floppy disks are needed:

Service Utility backup floppy disks	Two backup floppy disks to store Service Utility data from before the installation, marked with "Service Utility Backup 1(2)" and "Service Utility Backup 2(2)".
User Utility backup floppy disks	Two backup floppy disk to store User Utility from before the installation, marked with "User Utility Backup 1(2)" and "User Utility Backup 2(2)".

Starting the Service Utility

The procedure for starting the Service Utility varies depending on whether the Fuji CR Console power is ON or OFF.

When the power is OFF

Turn ON the PC power. Windows 2000 starts up. After about one minute the Fuji CR Application starts. When the initial window opens, sequentially click its upper left and right corners within a period of five seconds. The Service Utility starts and the IP Service Utility window opens.

When the power is ON

Hold down the **Shift** key and choose **Shut down** on the menu. Keep the **Shift** key pressed until the desktop screen appears. From the Start menu, sequentially choose **Programs > Fuji Film > FCR**. The Fuji CR Application starts in about one minute.

When the initial window opens, sequentially click its upper left and right corners within a period of five seconds. The Service Utility starts and the IIP Service Utility window opens.

Service Utility Backup

1. Press the **Configuration Restore / Backup** button according to Fig. 1.

Fig. 1 IIP Service Utility

2. Press the ..... button belonging to **Configuration Backup** according to Fig. 2.

Fig. 2 Configuration Restore / Backup

3. Insert the Service Utility Backup 1(2) floppy in drive A: Choose **A:** from **Drive** combo box and press **OK** according to Fig. 3.

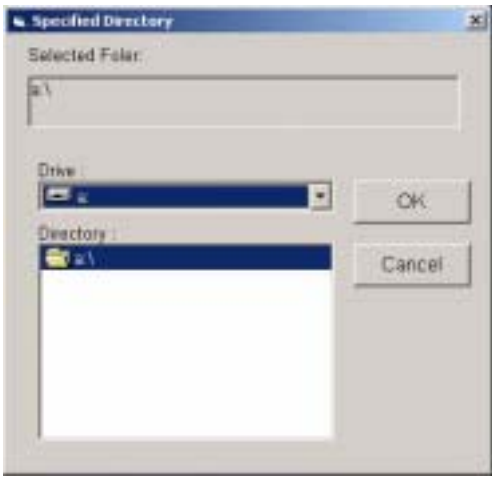

Fig. 3 Specified Directory

4. Press **Backup** button according to Fig. 4. Follow the instruction on the screen. Even when the backup process ends, no message appears to indicate it. While the process is being performed, the mouse cursor is replaced by an hourglass cursor. When the hourglass cursor changes back to the mouse cursor, it means that the process has ended.

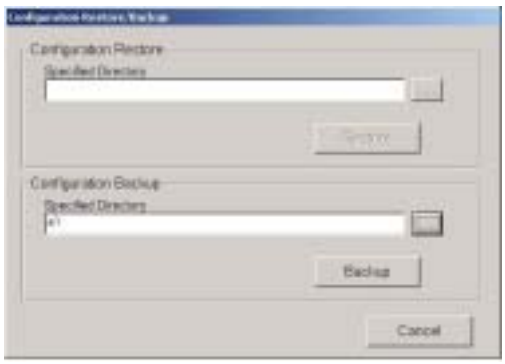

Fig. 4 Configuration Restore / Backup

5. Remove backup floppy.
6. When the process has ended, press **Cancel** button according to Fig. 4. Press **Exit Service Utility** button according to Fig. 1.
7. From the Start menu, sequentially choose **Programs > Fuji Film > FCR** to start the Fuji CR Application.

User Utility Backup

1. Enter the User Utility Main Menu by choosing User Utility on the menu according to Fig. 5.

Fig. 5 Enter User Utility

2. Press the **OK** button in the **Enter Password – User Utility** window, without entering any password, according to Fig. 6.

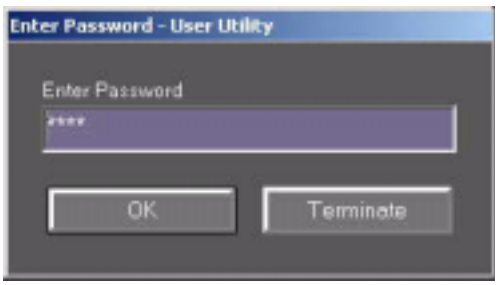

Fig. 6 Enter Password – User Utility

3. Press **Backup** button according to Fig. 7.

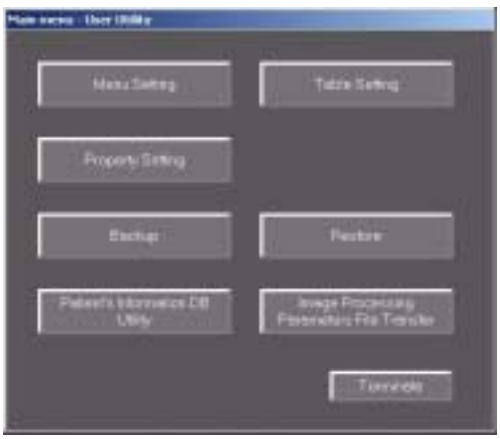

Fig. 7 Main Menu - User Utility

4. Insert the User Utility Backup 1(2) floppy in drive A: Mark all four check boxes and press **Start** button according to Fig. 8. Follow the instructions on the screen.

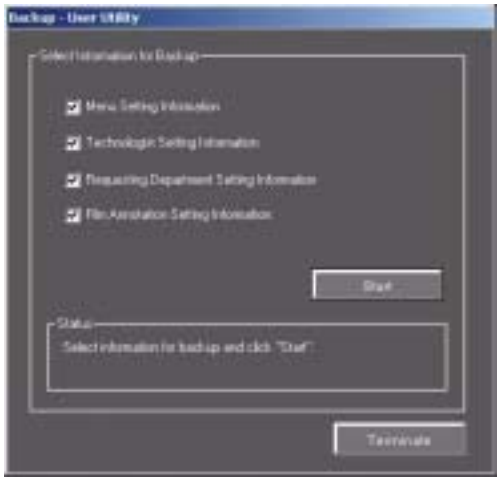

Fig. 8 Backup – User Utility

5. When the backup process is finished, press the **Terminate** button according to Fig. 8 and **Terminate** button according to Fig. 7.

Verify Fuji CR Console's IP configuration

1. Verify the Fuji CR Console IP address: From the Fuji CR Console's Start menu, choose **Run…**. Type **cmd** and press **OK** according to Fig. 1.

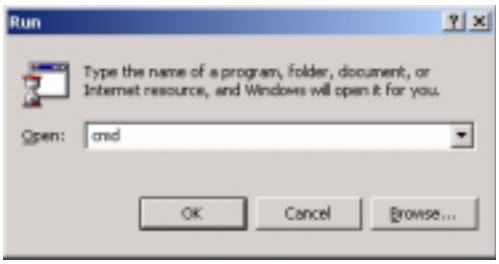

Fig. 1 Run

2. In the DOS prompt, type **ipconfig** and press **Enter**. The CR Console's IP address, subnet mask and default gateway will show according to Fig. 2 Note the information in the table below.

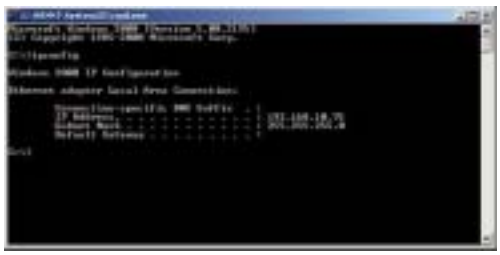

Fig. 2 IP Configuration

IP address	
Subnet mask	
Default gateway	
Hostname	

3. Close Command window.

Verify Fuji FCR 5000MA IP configuration

1. Verify the Fuji FCR 5000MA IP address: Start the Service Utility according to "Starting the Service Utility" on Page 5 - 1. Press the **Setup Configuration Item** button according to Fig. 1, Page 5 - 1. Mark **CONFIG > NETWORK CONFIG > ALL OTHER NODES > FCR 5000** to view the Fuji reader IP address, according to Fig. 3. Close the Service Utility by pressing **Config(F) > Close(C)**. Note the IP address in the table below.

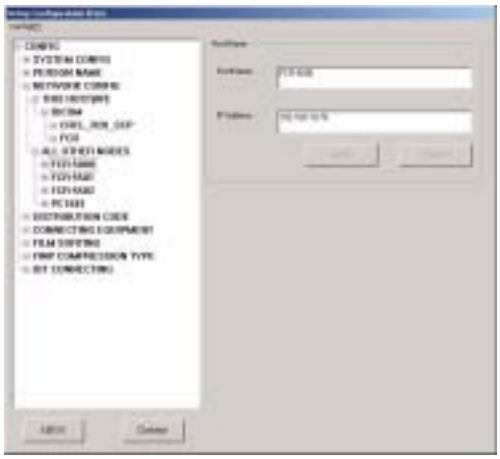

Fig. 3 Reader IP configuration

IP address	

Setup of service PC IP address

1. From the service PC's Start menu, choose **Settings > Control Panel > Network and Dial-up connections > Local Area Connection**. Press **Properties** button according to Fig. 4.

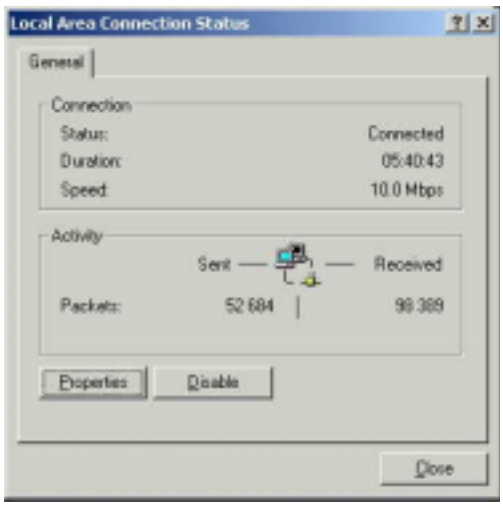

Fig. 4 Local Area Connection Status

2. Mark **TCP/IP** and press the **Properties** button according to Fig. 5.

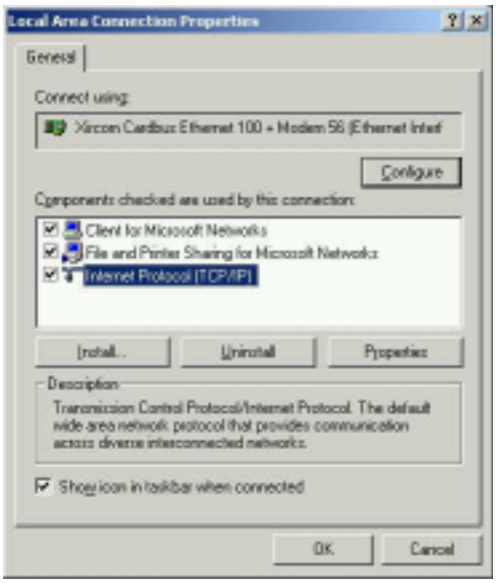

Fig. 5 Local Area Connection Properties

3. Change the service PC's IP address in such a way that the three first groups are identical to the CR Consoles (see step 2., Page 6 - 1) and the FCR 5000MA (see step 1., Page 6 - 2), and the fourth group is unique in the LAN. Change the service PC's Subnet Mask and Default Gateway to be identical to the Fuji CR Console's and press **OK** button according to Fig. 6. Press **OK** button according to Fig. 5. Press **Close** button according to Fig. 4.

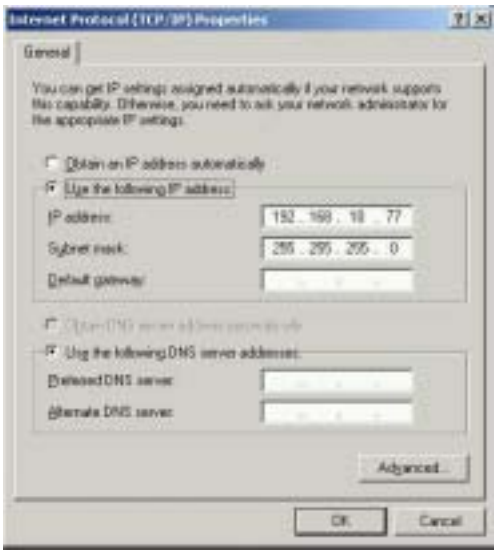

Fig. 6 Internet Protocol (TCP/IP) Properties

Editing hosts file

1. The IP address of the Fuji CR Console needs to be added to the service PC's Windows file **hosts**. This file can be found in the directory C:\WinNT\system32\drivers\etc. Open the file with e.g. Notepad and add a line with the Fuji Consoles IP address (see step 2., Page 6 - 1), and a name to identify it, according to Fig. 7. Save the file and exit Notepad.

hosts - Notepad
File Edit Format Help
Copyright (c) 1993-1999 Microsoft Corp.
#
This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
This file contains the mappings of IP addresses to host names. Each
entry should be kept on an individual line. The IP address should
be placed in the first column followed by the corresponding host name.
The IP address and the host name should be separated by at least one
space.
#
Additionally, comments (such as these) may be inserted on individual
lines or following the machine name denoted by a '#' symbol.
#
For example:
#
102.54.94.97 rhino.acme.com # source server
38.25.63.10 x.acme.com # x client host
127.0.0.1 localhost
192.168.10.75 cr-console

Fig. 7 Edit the Windows file hosts

AECImageExtract installation

1. Start service PC.
2. Log in (make sure you have administrator rights).
3. Open Windows Explorer.
4. Insert the AECImageExtract floppy in drive A:.
5. Run the self-extracting file, *AECImageExtract.exe*.
6. Unzip to folder C:\, press **Unzip** button and press **Close** button according to Fig. 8.

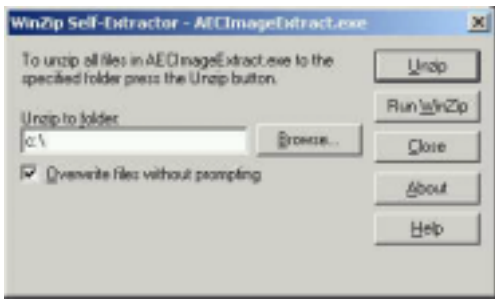

Fig. 8 UnZip Self-Extractor

7. Remove AECImageExtract floppy.

Adding environmental variables

1. From the Start menu, choose **Settings > Control Panel > System > Advanced**. Press **Environmental Variables** button according to Fig. 9.

Fig. 9 System Properties

2. Add a new **User Variables for Administrator** by pressing **New…** button according to Fig. 10.

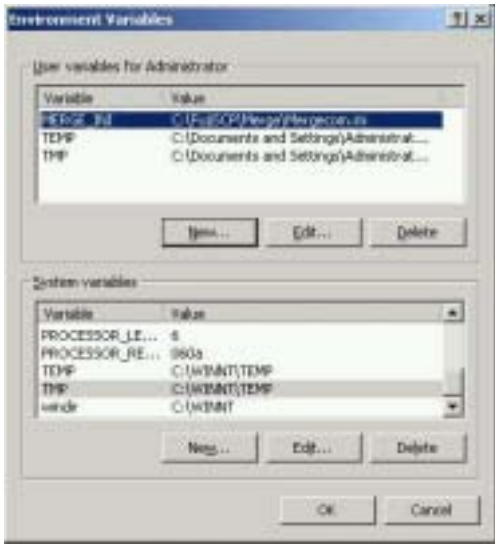

Fig. 10 Environmental Variables

3. Type **MERGE_INI** in the **Variable Name** field and **C:\AECImageExtract\Merge\Mergecom.ini** in the **Variable Value** field and press **OK** button according to Fig. 11. Press **OK** button according to Fig. 10 and according to Fig. 9. Restart the service PC.

Fig. 11 New User Variable

Start the AECImageExtract application

1. Start service PC.
2. Log in (make sure you have administrator rights).
3. Open Windows Explorer.
4. Start the AECImageExtract application on the service PC by running the batch file *go.bat* that can be found under the directory C:\AECImageExtract.

Verify the service PC's hostname

1. From the service PC's Start menu, choose **Run…**. Type **cmd** and press **OK** button according to Fig. 1.

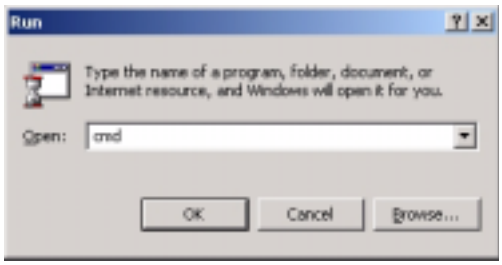

Fig. 1 Run cmd

2. In the DOS prompt, type "`hostname`" and press **Enter**. The service PC's hostname will show according to Fig. 2. Close Command window. Note the hostname in the table below.

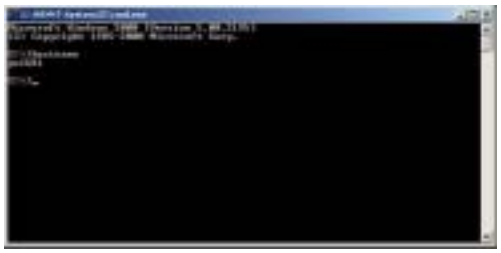

Fig. 2 Hostname

Hostname	

Creating network nodes

1. Enter the Fuji CR Console's IIP Service Utility according to "Starting the Service Utility" on Page 5 - 1. Press the **Setup Configuration Item** button according to Fig. 3.

Fig. 3 Service Utility

2. Add a network node for the service PC by marking **CONFIG > NETWORK CONFIG > ALL OTHER NODES** and pressing the **NEW** button according to Fig. 4.

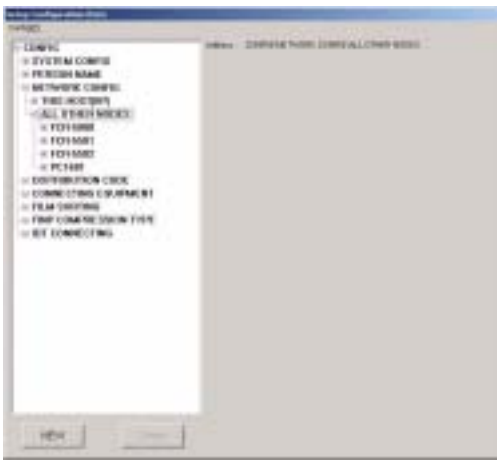

Fig. 4 Creating a new network node

3. Type the service PC's **HostName** (see step 2., Page 7 - 1) and **IP address** in respectively field, mark **DICOM** check box and press **OK** button according to Fig. 5.

Fig. 5 Network node information

4. Type the service PC's **Application Entity Name; DICOM_HIC**, which is preset by the AECImageExtract application, type **Port Number; 21760**, also preset by AECImageExtract, in respectively field, choose **OD_FILE** from the **Attribute** combo box and press the **New** button according to Fig. 6.

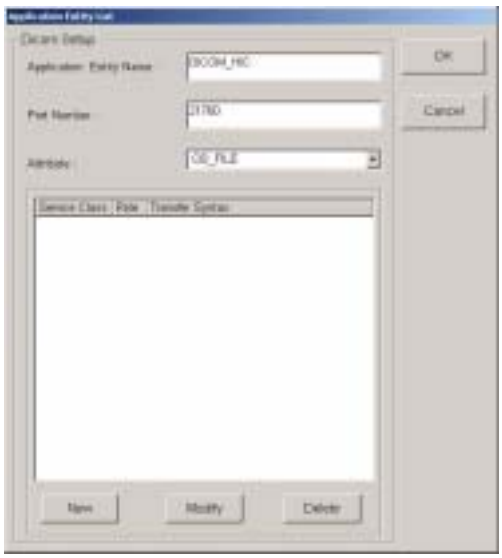

Fig. 6 Creating Service Classes as SCP

5. Set **Abstract Syntax** combo box to **CRImageStorage**, set **Role** to **SCP**, set **Transfer Syntax** combo box to **ImplicitVRLittleEndian**, set **Acceptable Density** to **ST & HQ & SH**, set **Default Output Density** to **HQ / SH**, set **Image Processing** to **NONE(N),** clear the **Multibyte** check box and press the **OK** button according to Fig. 7.

Fig. 7 CRImageStorage as SCP

6. Press **New** button according to Fig. 6. Set **Abstract Syntax** combo box to **Verification**, set **Role** to **SCP,** clear the **MultiByte** check box and press the **OK** button according to Fig. 8. Press **OK** button according to Fig. 6.

Fig. 8 Verification as SCP

7. Mark the row in **Network Config > This Host IIP > DICOM** where the service classes has SCU roles, and press **New** button according to Fig. 9.

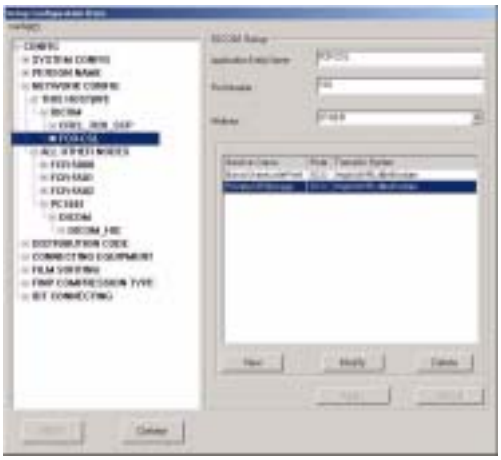

Fig. 9 Creating Service Classes as SCU

8. Set **Abstract Syntax** combo box to **CRImageStorage**, set **Role** to **SCU**, set **Transfer Syntax** combo box to **ImplicitVRLittleEndian,** clear the **Multibyte** check box and press the **OK** button according to Fig. 10.

Fig. 10 CRImageStorage as SCU

9. Press the **New** button according to Fig. 9. Set **Abstract Syntax** combo box to **Verification**, set **Role** to **SCU**, clear the **Multibyte** check box and press the **OK** according to Fig. 11.

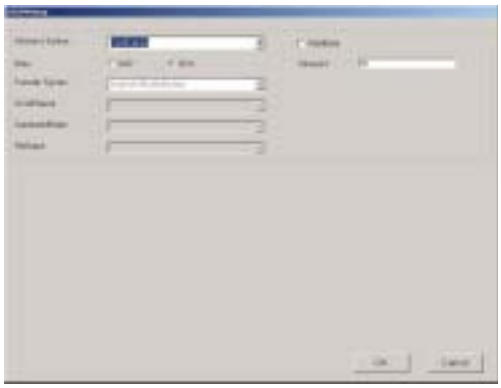

Fig. 11 Verification as SCU

10. Mark **Connecting Equipment** and press the **New** button according to Fig. 12.

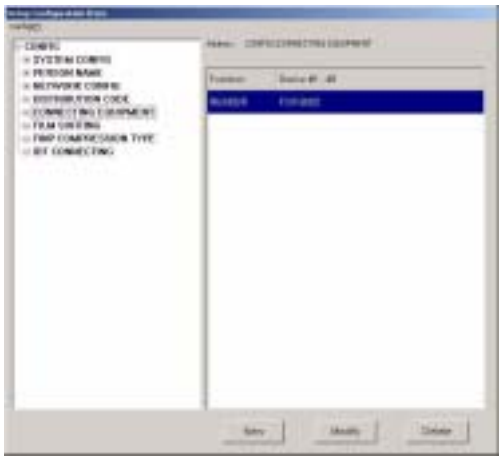

Fig. 12 Connect new equipment

11. Choose, or write, **OD_FILE** in the **Function** combo box. Choose the service PC's AE Title in the first Equipment combo box, even though other equipment are preset, and press **OK** button according to Fig. 13.

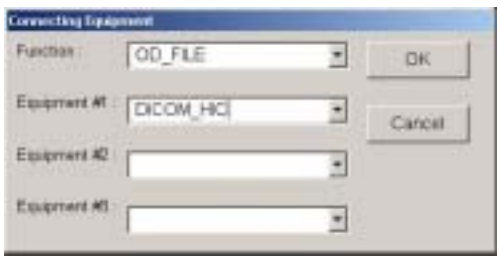

Fig. 13 Connecting service PC

12. Save Network configuration by pressing **Config(F) > Save(V)** in the top left corner according to Fig. 12. Exit the Service Utility by pressing **Config(F) > Close(C)**.

Verify connection

1. Choose **Verify Connection** according to Fig. 3. Select service PC's hostname in the upper combo box and press **Ping Network** button.
2. Start AECImageExtract application on service PC according to "Start the AECImageExtract application" on Page 6 - 6.
3. Choose service PC AE Title in lower combo box and press **Verify Connection** button. Press **Close** button according to Fig. 14.

Fig. 14 Verify Connection

4. Exit Service Utility by pressing **Exit Service Utility** button according to Fig. 3.

Create AEC Calibration exposure menu

1. Start the AECImageExtract application on the service PC according to "Start the AECImageExtract application" on Page 6 - 6.
2. From the Start menu on the Fuji CR Console, sequentially choose **Programs > Fuji Film > FCR**. The Fuji CR Application starts in about one minute.
3. Choose **User Utility** on the menu according to Fig. 15.

Fig. 15 Enter User Utility

4. Press **OK** button in the **Enter Password – User Utility** window, without entering any password, according to Fig. 16.

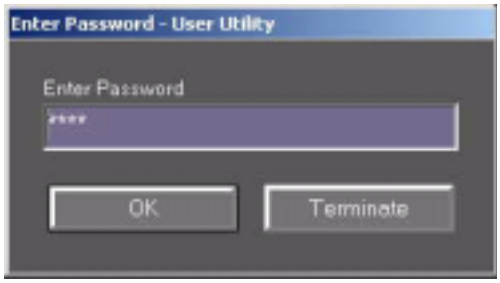

Fig. 16

5. Press **Menu Setting** button according to Fig. 17.

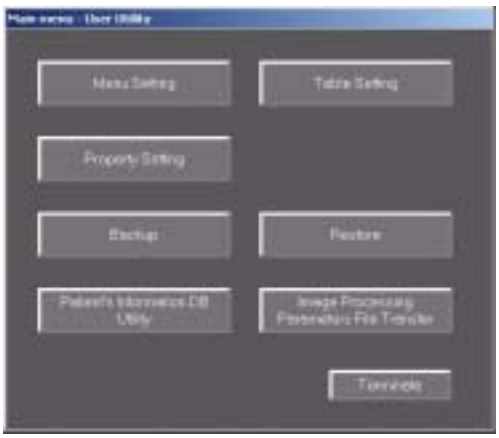

Fig. 17 User Utility Menu

6. Mark exposure menu **Max 4.0** in the **Exposure / Study Menu** field, and create a new exposure menu by pressing **New** button according to Fig. 18.

Fig. 18 Menu Setting

7. Name the new exposure menu *AEC Calibration* in the field **ANK Exposure Menu Name**. In **Exposure Parameter 1** task card, set **EDR Mode** to **Fix**, change **S value** to **121** and set **Film Output Format** to **One Image** according to Fig. 19.

Fig. 19 Exposure Parameter 1

8. In **Exposure Parameter 2** task card, set **Film Reference Orientation** to **Portrait**, **Film Edge** to **Black** and press **OK** button according to Fig. 20.

Fig. 20 Exposure Parameter 2

9. Drag and drop the AEC Calibration Exposure Menu from the Exposure/Study Menu field to one of the empty buttons in the TEST task card and press **OK** button according to Fig. 21.

Fig. 21 Drag and Drop

Property setting

1. The Property Settings has to be changed to prevent images to be sent to printers and to other storages than the service PC.
2. Enter property setting by pressing the **Property Setting** button according to Fig. 17.
3. Set **Setting of action to be taken…** to **Terminate Study after QA is completed**. (For Fuji CR Console software version A08: Set **The method at the time pushed "Study finish" button. (There is no unregistration menu)** to **Finish exposure & QA** in the task card Study setting).
4. Set **Auto-distribution Setting** to **Distributes automatically after QA completion** (in Fuji CR Console software version A08 this is done in the task card Distribution setting).
5. Set **PRINT Attribute** to **(none)** to prevent the AEC exposures to be printed (in Fuji CR Console software version A08 this is done in the task card Distribution setting).
6. Set **FILE Attribute** to the service PC's AE Title to enable automatic distribution of images to the service PC (in Fuji CR Console software version A08 this is done in the task card Distribution setting).
7. Press **OK** button according to Fig. 22. Exit the User Utility menu by pressing the **Terminate** button according to Fig. 17.

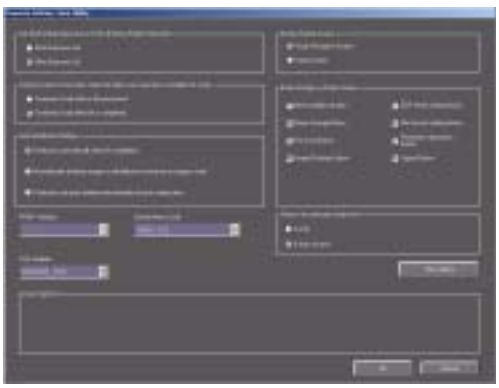

Fig. 22 Property Setting

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1. Input patient information (either Patient ID or Patient´s Name is necessary) and press the **Exposure Menu** button according to Fig. 1.

Fig. 1 Patient registration

2. During the whole AEC calibration, choose the AEC Calibration exposure menu from the TEST task card according to Fig. 2 and press **OK** button.

Fig. 2 AEC Calibration

3. Start the study by pressing the **Start Study** button according to Fig. 3.

Fig. 3 Start Study

4. Insert the IP cassette in the object table according to Fig. 4.

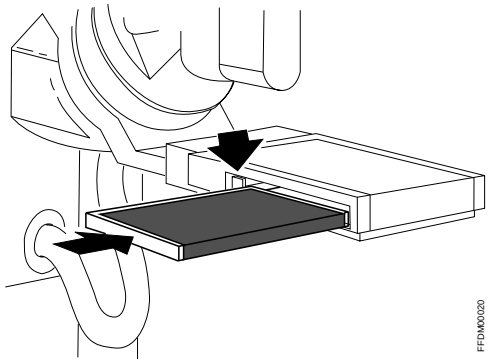


Fig. 4 Insertion of IP cassette

5. Make an exposure with the MAMMOMAT. Register the cassette either by the Barcode Scanner, or by pressing the **IP#** button according to Fig. 3, and then type the 8 digit number from the cassette according to Fig. 5 and press Enter on the keyboard.

Fig. 5 Cassette registration

6. Make sure that the cassette ready lamp lights green.

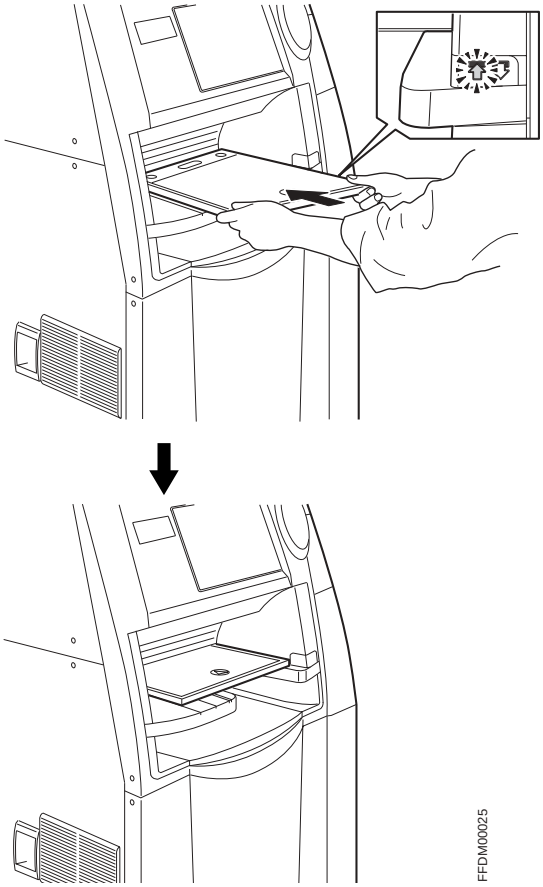


Fig. 6 Inserting the cassette

7. With the IP cassette's barcode window facing up and in front, insert the IP cassette slowly straight along the guide on the right.

⚠CAUTION **Be sure to insert the cassette as illustrated, straight along the guide on the right. Cassettes that have been set upside-down, in the wrong direction or at a slant will result in abnormalities and may damage the equipment.**

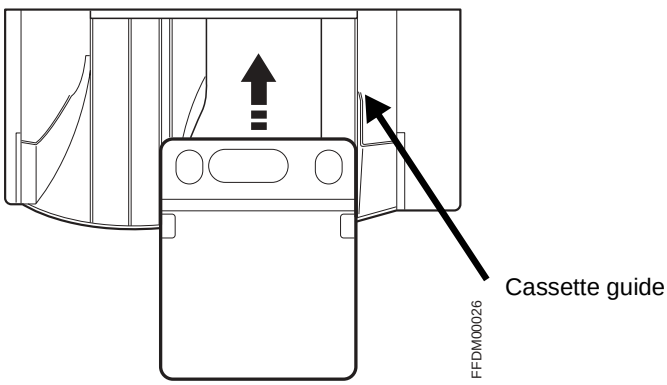


Fig. 7 Insert straight slowly

8. After approximately 60 s when the cassette removal lamp is lighting, remove the cassette slowly and straight. (The cassette can be used directly for a new exposure.)

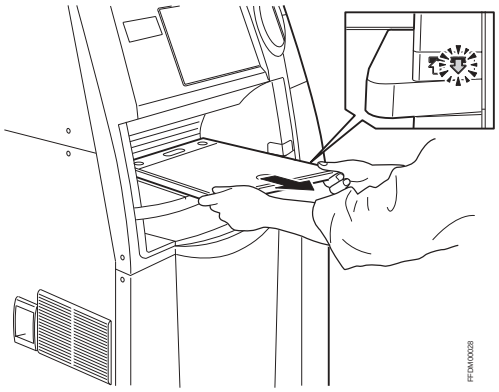


Fig. 8 Removing the cassette

9. When the image has been sent from the reader and appears on the Fuji CR Console Screen, press the button once to return to the Registration task card and to send the image to the service PC according to Fig. 9.

Fig. 9 Image transfer

General

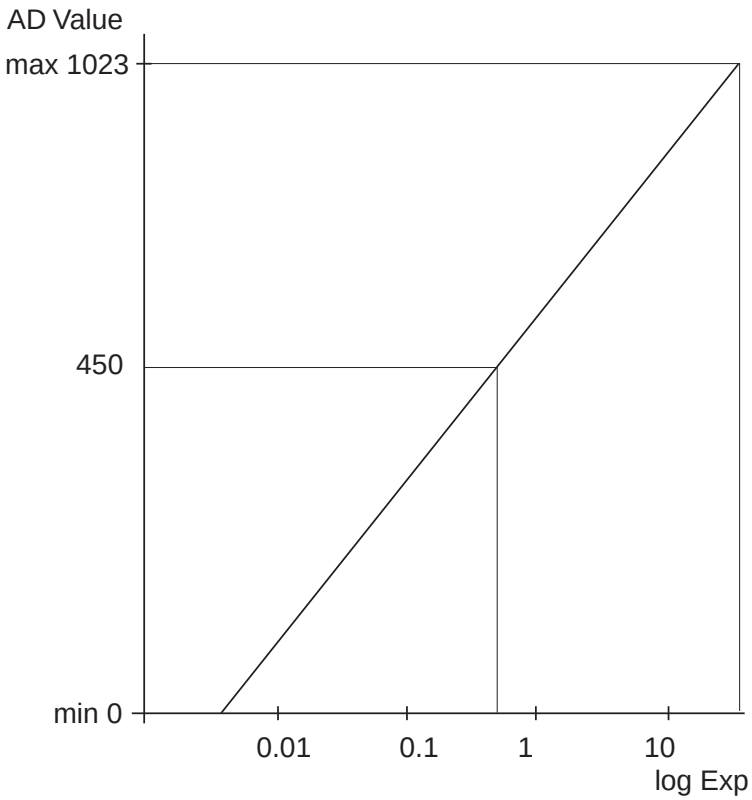
These instructions describe installation of AEC floppy disk with material No. 66 01 897. This floppy disk makes AEC tables for Fuji CR HR-BD imaging plate in IP CASS-BD M available.

The AEC is based on correction tables. The tables are optimized for the IP/cassette combinations in table 1.

Table 1				**Correction table identifications**		
Scanner	**IP**	**Cassette**	**Sensitivity**	**Mo/Mo**	**Mo/Rh**	**W/Rh**
Fuji FCR5000MA plus	Fuji CR HR-BD	Fuji IP CASS-BD M	0	1401	1402	1403

Definitions

AD Value



Old backup floppy disk	Backup floppy disk to store data from before the installation. To be marked “Old backup” and with serial No. of the MAMMOMAT system, date, and version of the correction tables.
New backup floppy disk	Backup floppy disk to store data during and after the installation. To be marked “New backup” and with serial No. of the MAMMOMAT system, date, and version of the correction tables.

Protective measures

It is very important that any intervention in the equipment will start by disconnecting it from the power supply with the main circuit-breaker.

⚠WARNING

If the system is only switched off at the control panel or with S2/D711, line voltage will still be present at the generator line connection, line filter Z1, Z2, transformer T1, transformer T10 and PC board D711 (see MAMMOMAT 3000 Nova Wiring Diagram).

Life-threatening electric shock hazard exists.

Disconnect mains cable and comply with the information on this page.

⚠WARNING

After shut-down of the system, there may still be 380 V DC present on the intermediate circuit.

Life-threatening electric shock hazard exists.

The voltage level will be indicated by LED V24 on PC board D710. The voltage will drop to less than 30 V within about 3 minutes, the LED goes out at about 30 V.

Symbols

Checks and adjustments that must be performed with radiation ON are identified by the radiation warning symbol.

Delay times between two exposures

Delay times listed below must be followed in order to prevent the tube from overheating.

Exposure mAs value	Delay time between two exposures (seconds)
max 100	min 15
max 200	min 30
max 300	min 45
max 400	min 60
max 500	min 75

Preparation of backup floppy

1. Start service PC.
2. Log in (make sure you have administrator rights).
3. Open Windows Explorer.
4. Create a new folder under C: and name it “AEC_inst”.
5. Insert the service program floppy in drive A:.
6. Copy the files service.exe and m300.h60 from A: to C:\AEC_inst.
7. Insert the floppy AEC correction tables in drive A:.
8. Copy all files from A: to C:\AEC_inst.
9. Mark an empty backup floppy with **new backup**, serial number of the MAMMOMAT system, version of the correction tables, and date. Insert the floppy in drive A.
10. Copy the content of C:\AEC_inst to A:.
    Use this floppy for the rest of the installation.
11. Press **Start** and select **Programs > Accessories > Command Prompt**.
12. In the DOS prompt, type:
    “CD \” and press Enter,
    “MKDIR mammomat” and press Enter,
    “CD mammomat” and press Enter,
    “A:” and press Enter.
13. If AEC correction tables have been installed on the MAMMOMAT before, make a backup of these tables, see "Backup of existing system" on Page 9 - 4.
14. Start the service program by running the service.exe file from A:.

Backup of existing system

1. Make sure that the service floppy is still in drive A:.
2. Start the service program by writing: Service, then press Enter.
3. - In the log in-menu, enter your name and press Enter.
   - Type the password for the service program and press Enter.
   - In Program-mode set: **normal**.
4. Check that service program version 4.3 or higher is used. The version is shown in the top left corner of the display.
5. In **Mainmenu** select **Configuration > Power**. Note the displayed power values in the test protocol on Page 12 - 1.
6. Take the backup to hard disk: **Backup > Copy installation area to disk > All**.
7. Take out the floppy with the service program and insert an empty floppy disk and mark it with ***old backup***, serial number of system, version of the correction tables, and date. This floppy is defined as ***old backup floppy***.
8. In **Mainmenu** select **Configuration > Save config file**. Press F2 to save.
9. In **Mainmenu** select **Service > Copy error buffer to file**.

10. If the MAMMOMAT is equipped with OPDOSE, press the left program button on the panel. Note the displayed exposure settings in the test protocol on Page 12 - 1. Repeat for all four programs. Enter menu **Configuration > Miscellaneous > Auto limits**. Note the three values in test protocol on Page 12 - 1, in column “Breast thickness”.
11. Quit the service program by pressing F10.
12. Type “C:” and press Enter.
13. Type “COPY *.TXT A:” and press Enter.
14. Check that the following backup files are stored on the floppy disk (by typing “dir a:”, then pressing Enter):

    - a_backup.txt for AEC parameters
    - s_backup.txt for stand parameters
    - p_backup.txt for panel parameters
    - momo_h.txt for AEC correction tables
    - morh_h.txt for AEC correction tables
    - wrh_h.txt for AEC correction tables
    - momo_d.txt for AEC correction tables
    - morh_d.txt for AEC correction tables
    - wrh_d.txt for AEC correction tables
    - mammo.cfg for configuration parameters
    - errorbuf.txt for error log
15. Type “DEL *.TXT” and press Enter.
16. Remove the floppy disk and make it write protected.
17. Insert the ***new backup floppy*** in drive A:.
18. Start the service program by running the service.exe file from A:.

Definitions

Object table group

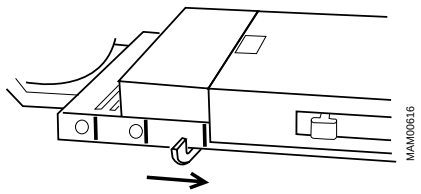
An object table group contains all object tables of the same type. There are four groups of object tables - Grid, No grid, Magnification and Stereo. For example the object table group Grid, consists of Grid 18x24 and Grid 24x30.

NOTE	**Stereo shall not be used together with Fuji CR.**

General conditions

When performing the settings in this chapter, there are some general conditions valid for all settings:

- The detector is to be in chest wall position.



- The AEC calibration plexi (material No. 65 61 224 and 65 61 232) must extend at least 10 mm beyond the chest wall edge of the table and be centered. Place the AEC calibration plexi in the same position for all exposures.

Calibration conditions

Compression plate must not be used during the calibration of correction tables. From the point sensitivity correction (fine setting) a compression plate may be used.

Reference IP cassette

Every DIGISCAN M system should have a reference IP cassette. Use this reference IP cassette where required and for the settings in this chapter. If there is no dedicated reference IP cassette, pick one IP cassette, mark it and use it for the settings in this chapter.

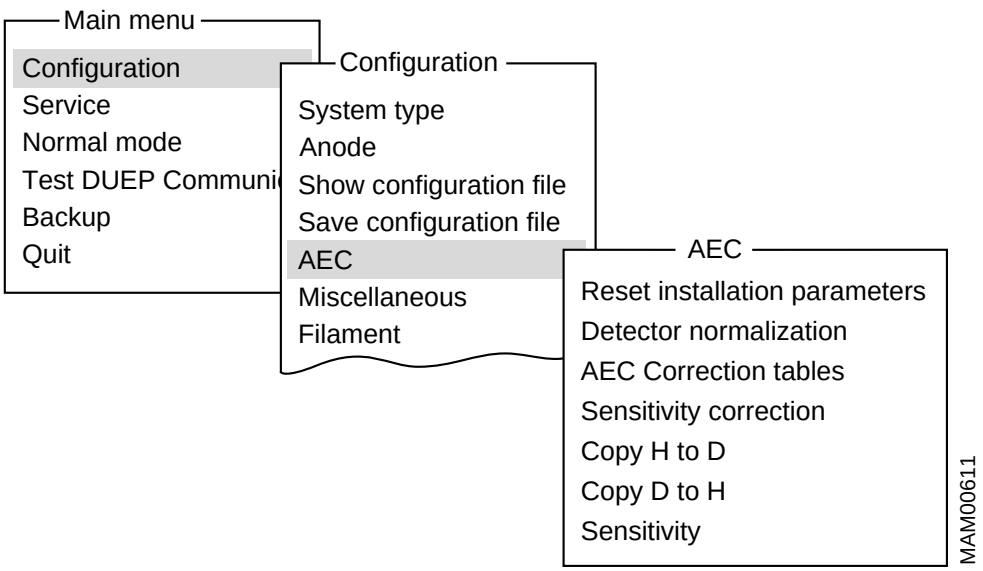
Mains voltage

Unless otherwise stated, the mains voltage and system must be ON and the service program running, before performing any setting in this chapter.

Sensitivity conditions

- One step (1/8 E.P.) corresponds to approximately 4 AD Values.

Overview of work routine



1. "AEC Correction tables" on Page 9 - 9.
2. "Sensitivity correction (fine setting)" on Page 9 - 17.
3. "Sensitivity" on Page 9 - 19.

DLF switch off

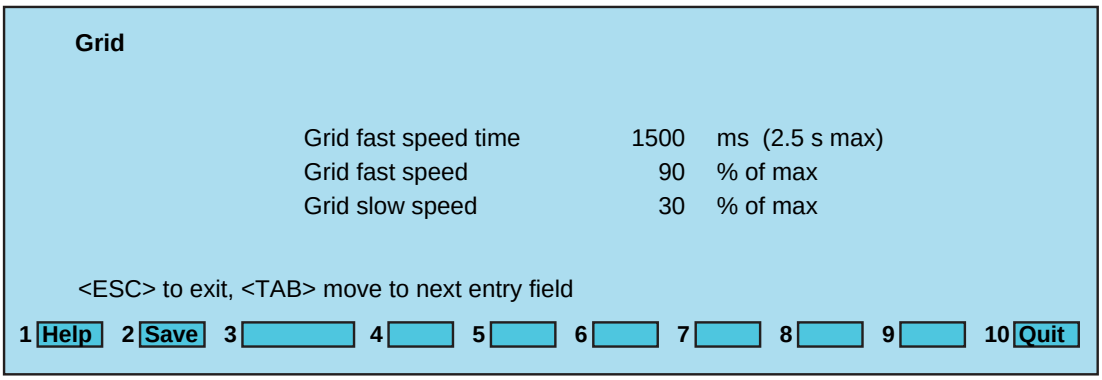
Deactivate the DLF switch. In **Main menu** select **Configuration > Miscellaneous > DLF switch**. Press space to set switch to OFF. Press F2 to save.

Cassette loaded

In **Mainmenu** select **Configuration > Miscellaneous > Cassette loaded check**. Press space to set switch to OFF. Press F2 to save.

Increase grid speed

Increase the grid speed. In **Main menu** select **Configuration > Grid speed**. Set the following values. Press F2 to save.


Grid
Grid fast speed time 1500 ms (2.5 s max)
Grid fast speed 90 % of max
Grid slow speed 30 % of max
<ESC> to exit, <TAB> move to next entry field
1 Help 2 Save 3 4 5 6 7 8 9 10 Quit

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AEC Correction tables

This section will guide you through the following steps:

- Installation of correction tables (F2).
- Calibration of correction tables (F3), including rough setting of sensitivity correction.

The AEC uses one correction table for each Anode/Filter/Speed combination. Each correction table has separate corrections for each object table group (Magnification, Grid and No grid).

Installation of AEC correction tables

1. Start the AECImageExtract application on the service PC by running the batch file *go.bat* that can be found under the directory C:\AECImageExtract.
2. In **Mainmenu** select **Configuration > AEC > AEC correction tables**.
   The dashes in the ID column show that no correction table is installed (Fig. 1).

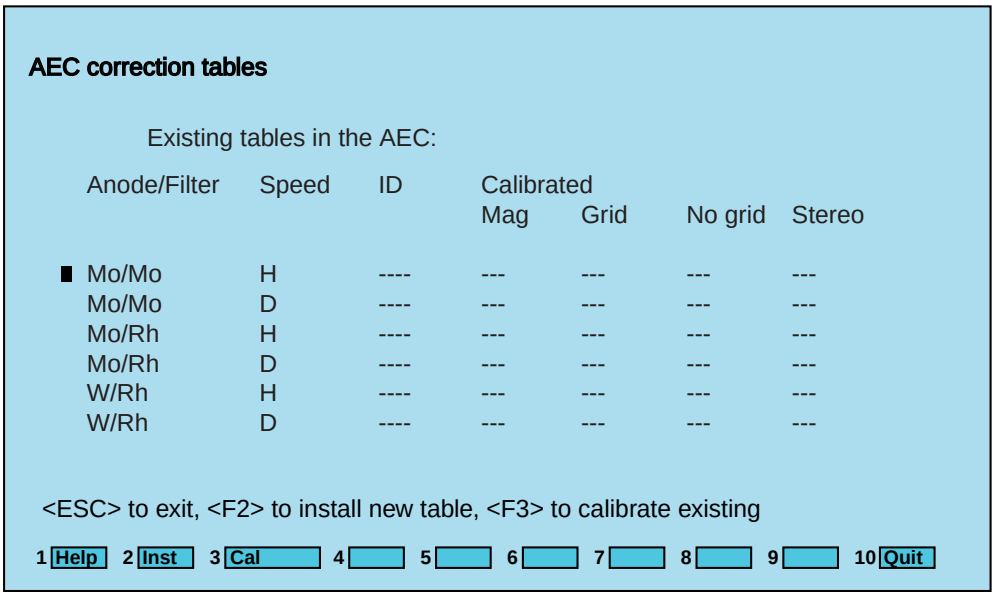
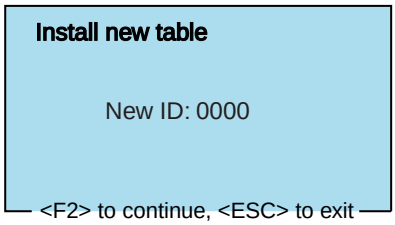

AEC correction tables
Existing tables in the AEC:
Anode/Filter Speed ID Calibrated
Mag Grid No grid Stereo
Mo/Mo H ---- --- --- --- ---
Mo/Mo D ---- --- --- --- ---
Mo/Rh H ---- --- --- --- ---
Mo/Rh D ---- --- --- --- ---
W/Rh H ---- --- --- --- ---
W/Rh D ---- --- --- --- ---
<ESC> to exit, <F2> to install new table, <F3> to calibrate existing
1 Help 2 Inst 3 Cal 4 5 6 7 8 9 10 Quit
MAM00599

Fig. 1 AEC correction tables

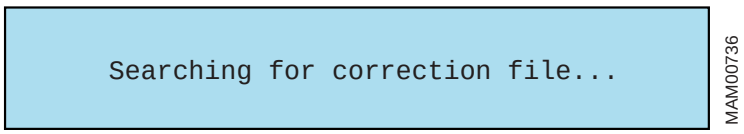
NOTE **Install the correction tables on D only!**

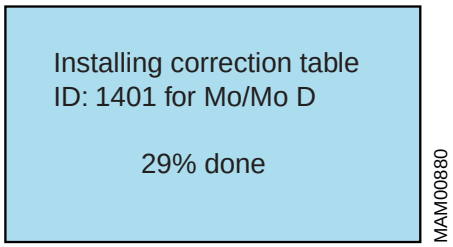
3. Make sure that the ***new backup floppy*** is inserted.
4. Decide for which combination you need to install correction table. (For available identifications for correction tables see Table 1, Page 9 - 1 or the new backup floppy.)

5. Place the cursor by one of the desired Anode/Filter/Speed combinations. Press F2.



6. Type the ID number of the new correction table (see Table 1, Page 9 - 1) in the dialog which appears. Press F2 to install the table. A message box will appear before the correction file has been found.





7. When the transaction of tables is finished, a dialog like Fig. 2, Page 9 - 12 will appear. To complete the calibration, proceed from step 5 of that section.

NOTICE

In order to resume calibrating after having quit the program:

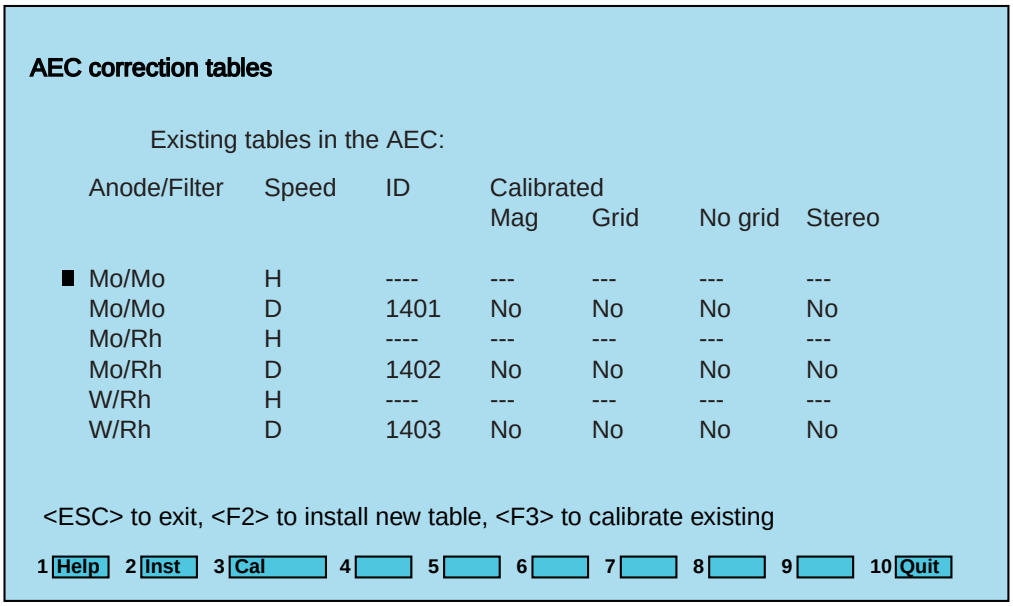
Follow the instructions from step 1 under "Calibrate correction tables" on Page 9 - 11.

Calibrate correction tables

NOTE	**The new backup floppy must be inserted.**

The Anode/Filter/Speed combinations should be calibrated one at a time.

1. In **Mainmenu** select **Configuration > AEC > AEC correction tables**.


AEC correction tables
Existing tables in the AEC:
Anode/Filter Speed ID Calibrated
Mag Grid No grid Stereo
Mo/Mo H ---- --- --- --- ---
Mo/Mo D 1401 No No No No
Mo/Rh H ---- --- --- --- ---
Mo/Rh D 1402 No No No No
W/Rh H ---- --- --- --- ---
W/Rh D 1403 No No No No
<ESC> to exit, <F2> to install new table, <F3> to calibrate existing
1 Help 2 Inst 3 Cal 4 5 6 7 8 9 10 Quit

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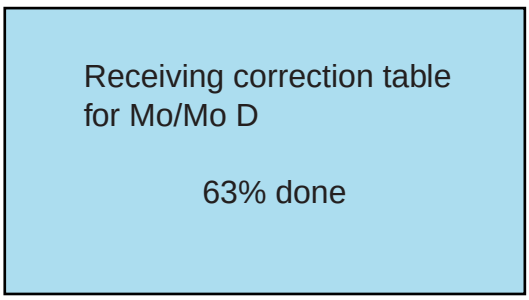
NOTICE	**All object table groups and Anode/ Filter combinations available at the site must be calibrated prior to release for clinical use.**

2. Place the marker by one of the desired Anode/Filter/Speed combinations. Press F3 to transfer the table.
3. This message box is displayed while the service program receives the correction table.



MAM00882

4. When the transfer is done, the dialog *Calibration AEC correction table* appears.

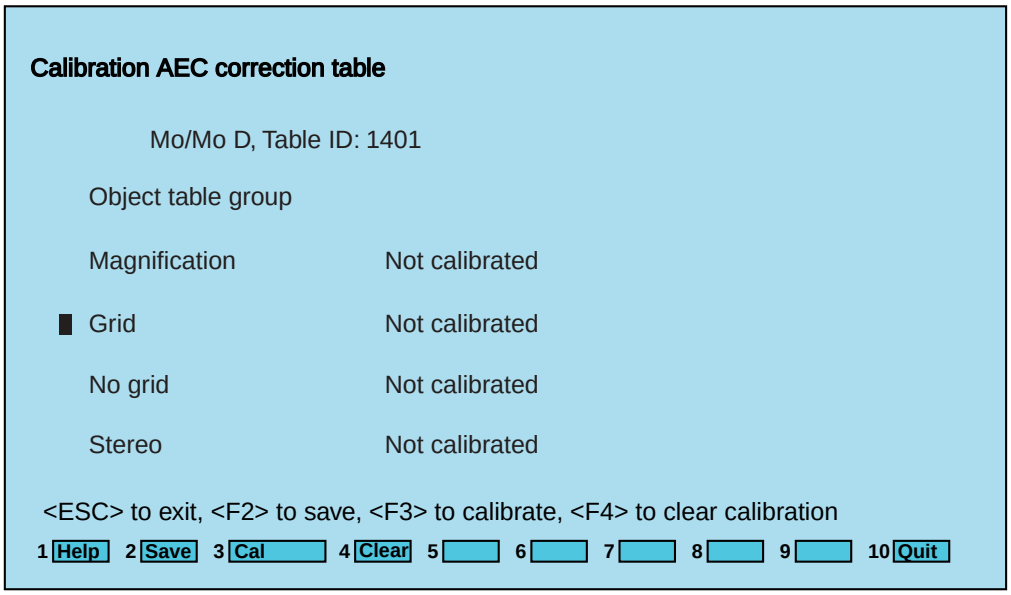
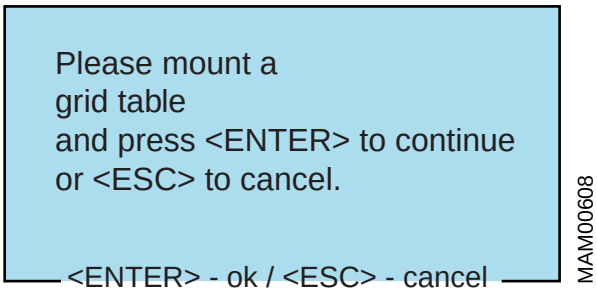

Calibration AEC correction table
Mo/Mo D, Table ID: 1401
Object table group
Magnification Not calibrated
Grid Not calibrated
No grid Not calibrated
Stereo Not calibrated
<ESC> to exit, <F2> to save, <F3> to calibrate, <F4> to clear calibration
1 Help 2 Save 3 Cal 4 Clear 5 6 7 8 9 10 Quit
MAM00883

Fig. 2 Dialog *Calibration AEC correction table* shows which object tables, in the current Anode/Filter/Speed combination, have been calibrated.

5. To calibrate the correction table for an object table group, place the cursor in front of the group. Press F3.



6. Follow the instructions in the message box above and press Enter.

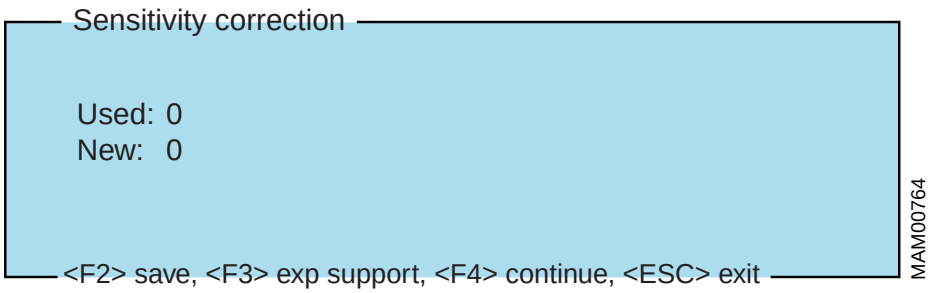


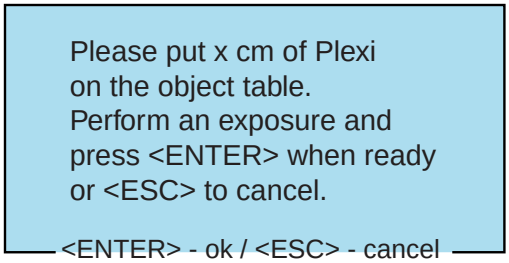
Fig. 3 Dialog *Sensitivity correction*

7. Before calibrating the installed correction tables, it is necessary to make a rough setting of the sensitivity correction for the chosen object table group.
8. Insert the reference IP cassette in the object table.

NOTE	**Make sure the new backup floppy is inserted.**

NOTE	**Do not use a compression plate.**

9. Press F3.



MAM00728

10. Follow the instructions in the message box in the service program, press Enter and perform an examination according to "Examination" on Page 8 - 1.
11. Register the AD Value (Average pixel value for the area of interest) that is displayed in the AECImageExtract window at the service PC.
12. If the value differs from 450, switch to the service program, adjust the values in dialog *AEC - Sensitivity correction* (Fig. 3) according to the Rough reference value displayed in the AECImageExtract window.
13. Save the new Sensitivity correction value with F2. Repeat the procedures described from step 8 to step 13 until the value is within 450±2.
If the value is satisfactory, proceed by pressing F4.

NOTE	**One adjustment step of sensitivity correction (1/8 E.P.) corresponds to approximately 4 AD Values, i.e.** $\frac{450 - x}{4} = y$ **x = obtained AD Value** **y = suggested adjustment for sensitivity correction**

NOTE	**It is important to use 450 and the specified AEC calibration plexi (material No. 65 61 224 and 65 61 232) during the procedures under “Calibrate correction tables”, since measurements are relative to factory results at 450.** **The AD Value preferred by the customer can be adjusted later either in Sensitivity correction or Sensitivity.**

14. Take another IP cassette than the reference IP cassette. Since it will not be developed, the IP cassette can be used for all exposures during the following calibration.

NOTE	**Using secondary erasure, erase the used IP cassette after the fourth exposure, otherwise the IP cassette cannot be utilized for one day.**

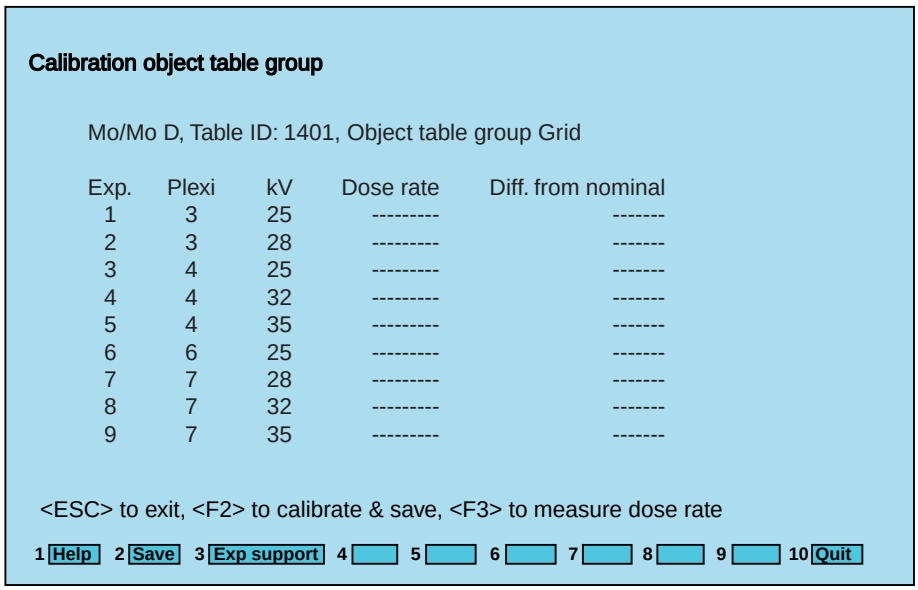
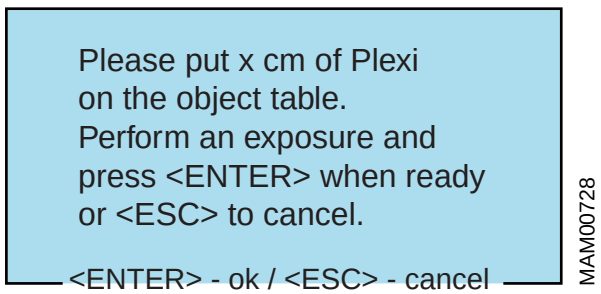

Calibration object table group
Mo/Mo D, Table ID: 1401, Object table group Grid
Exp. Plexi kV Dose rate Diff. from nominal
1 3 25 --------- -------
2 3 28 --------- -------
3 4 25 --------- -------
4 4 32 --------- -------
5 4 35 --------- -------
6 6 25 --------- -------
7 7 28 --------- -------
8 7 32 --------- -------
9 7 35 --------- -------
<ESC> to exit, <F2> to calibrate & save, <F3> to measure dose rate
1 Help 2 Save 3 Exp support 4 5 6 7 8 9 10 Quit
MAM00885

Fig. 4 Dialog *Calibration object table group* shows the dose rates for a number of exposures. The dashed lines below Dose rate indicate that no exposures have been performed yet.

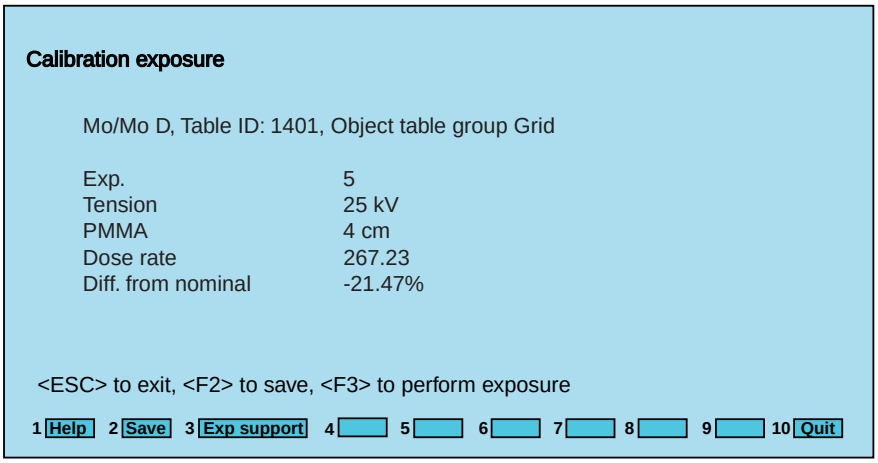
15. To proceed with the calibration, place the cursor by one of the alternatives. Press F3.



16. Follow the instructions in the message box shown.

NOTE	**Do not use 2 × 1 cm plexi plates instead of a 2 cm plate.**

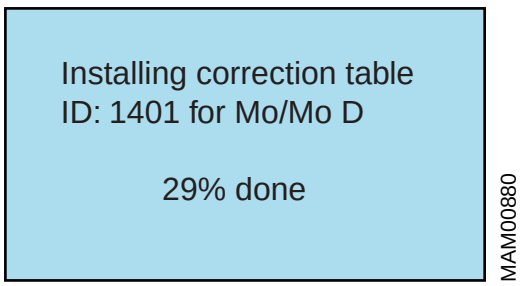
17. When the exposure is done, the dialog *Calibration exposure* appears with values for Dose rate and Diff. from nominal.


Calibration exposure
Mo/Mo D, Table ID: 1401, Object table group Grid
Exp. 5
Tension 25 kV
PMMA 4 cm
Dose rate 267.23
Diff. from nominal -21.47%
<ESC> to exit, <F2> to save, <F3> to perform exposure
1 Help 2 Save 3 Exp support 4 5 6 7 8 9 10 Quit
MAM00884

NOTE

If the Diff. from nominal exceeds ±50% ensure that the exposure really has taken place, the thickness of AEC calibration plexi (material No. 65 61 224 and 65 61 232) is correct and properly positioned and that the cassette (loaded with IP) is inserted and repeat the last exposure. If the difference still exceeds ±50% accept the value and proceed.

18. Save the values with F2.
19. Repeat steps 15 to 18 until all exposures are done.
20. Perform a secondary- and a primary erasure of the IP cassette according to "Erasing the IP cassette(s)" on Page 4 - 2.
21. When all exposures for one object table group are done, save the values with F2 in the dialog *Calibration object table group*.
22. The dialog *Calibration AEC correction table* appears. Select the next object table group and repeat steps 5 to 22.
23. When all desired object table groups are calibrated, press F2 to install the calibrated correction table in the AEC.



24. The dialog *AEC correction tables* appears. Repeat from step 2 until all available Anode/ Filter combinations are calibrated.

Recalibration of an object table

An already calibrated object table group can be recalibrated.

NOTE	**Make sure the new backup floppy is inserted.**

1. Repeat the procedure described in steps 1 to 4, Page 9 - 11.
2. To recalibrate a correction table for an object table group, place the cursor in front of the group. Press F4. This will reset the existing calibration of the chosen object table group and replace it with the original correction table stored on the floppy.
3. Press F2 to save.
4. Recalibrate the desired object table group according to the normal procedure, from step 2, Page 9 - 11.

Sensitivity correction (fine setting)

NOTE	**New backup floppy must be inserted. The specified AEC calibration plexi (material No. 65 61 224 and 65 61 232) must be used.**

When all desired object table groups are calibrated, a fine setting of the sensitivity correction should be performed for all available object tables.

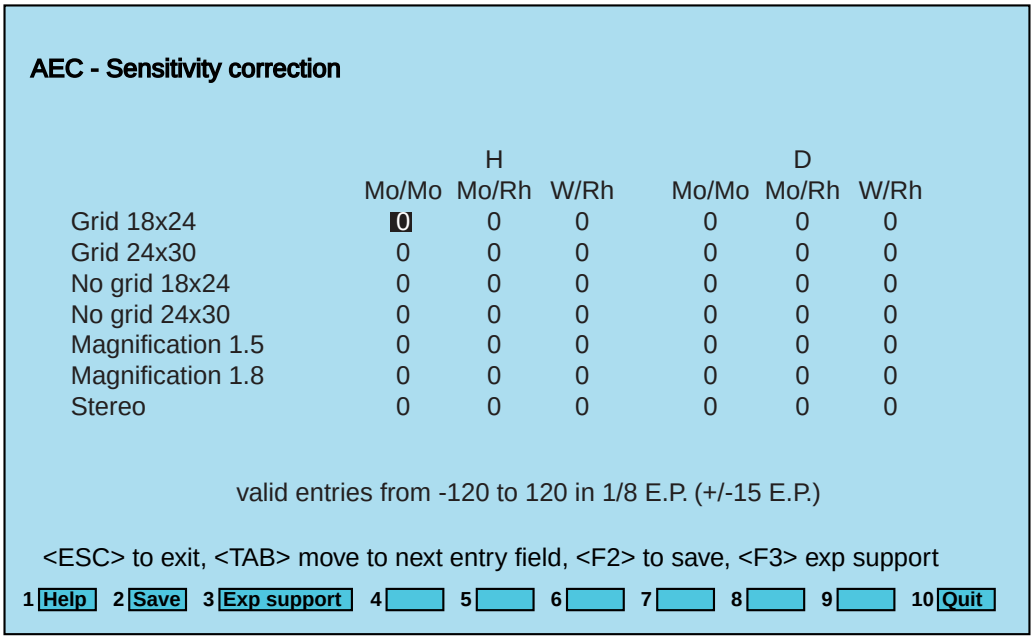

AEC - Sensitivity correction
H
D
Mo/Mo Mo/Rh W/Rh Mo/Mo Mo/Rh W/Rh
Grid 18x24 0 0 0 0 0 0
Grid 24x30 0 0 0 0 0 0
No grid 18x24 0 0 0 0 0 0
No grid 24x30 0 0 0 0 0 0
Magnification 1.5 0 0 0 0 0 0
Magnification 1.8 0 0 0 0 0 0
Stereo 0 0 0 0 0 0
valid entries from -120 to 120 in 1/8 E.P. (+/-15 E.P.)
<ESC> to exit, <TAB> move to next entry field, <F2> to save, <F3> exp support
1 Help 2 Save 3 Exp support 4 5 6 7 8 9 10 Quit

Fig. 5 Set the sensitivity correction for all desired object tables.

1. In **Mainmenu** select **Configuration > AEC > Sensitivity correction**.
2. Install an object table.
3. Insert the reference IP cassette in the object table.
4. Perform an examination according to "Examination" on Page 8 - 1.

NOTE	**From this point forward a compression plate may be used.**

5. Register the AD Value (Average pixel value for the area of interest) that is displayed in the AECImageExtract window at the service PC.
6. If the value differs from 400 (factory recommended value) or the customer preferred value, switch to the service program, adjust the values in dialog *AEC - Sensitivity correction* (Fig. 3) according to the Fine reference value displayed in the AECImageExtract window.
7. The AD value should be as close to 400 (or by customer preferred) as possible. One adjustment step of sensitivity correction (1/8 E.P.) corresponds to approximately 4 AD Values. If the value is more than 4 AD Values from the preferred value, switch to the service program and adjust the values in dialog *AEC*

- *Sensitivity correction* (Fig. 5). Save with F2. Repeat the procedure described in steps 3 to 5.

NOTE

One adjustment step of sensitivity correction (1/8 E.P.) corresponds to approximately 4 AD Values, i.e.

$$\frac{400(\text{or customer preferred}) - x}{4} = y$$

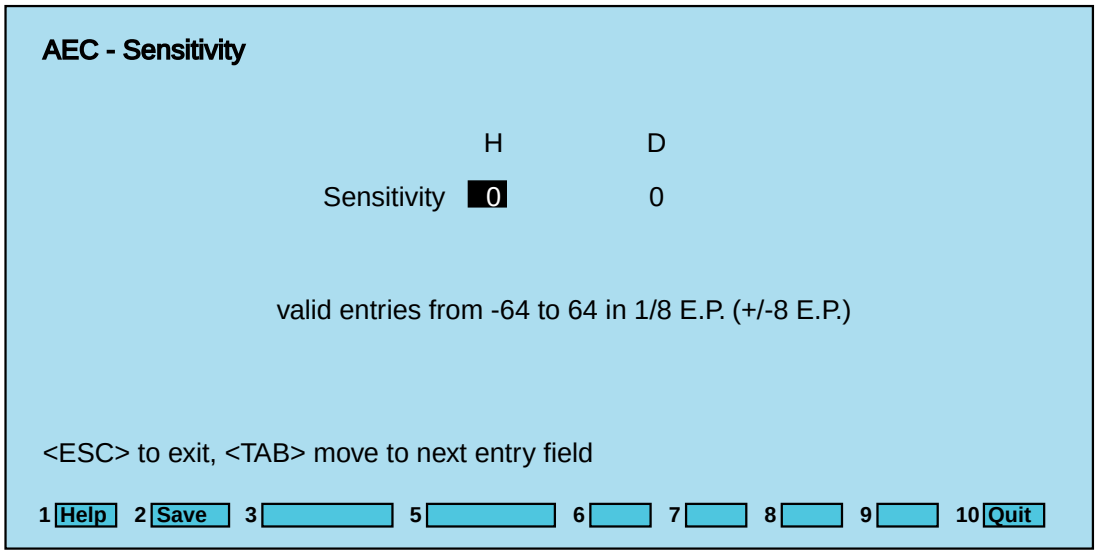
x = obtained AD Value

y = suggested adjustment for sensitivity correction

8. Repeat this procedure for the other object tables if applicable.

Sensitivity

Adjustment of AD Value for the whole AEC is performed under **Mainmenu > Configuration > AEC > Sensitivity**.



NOTE	**The AD Value preferred by the customer can be set with this function. The customer's own phantom(s) can also be used.**

Testing the AEC-function

AEC performance test

Testing of the AEC-function is to be performed according to the test protocol on Page 12 - 2, and for the object tables in question. (Should error codes Er013 or Er450 appear; change to AEC
calibration plexi (material No. 65 61 224 and 65 61 232) which is 1 cm thinner.)

NOTE	**Tolerance only valid for IP/cassette combinations listed in Table 1 under "General" on Page 9 - 1.**

Image detector dose

1. Position 3-5 cm plexi on the grid object table. Be careful to position the plexi so that it is overlapping the chest wall edge with approximately 1 cm, in order for the AEC to operate in a correct way.
2. Insert the reference IP casette in the grid object table.
3. Make an AEC exposure with 28 kV and Mo/Mo. Select the AEC D button to use the AEC mode.
4. Record the indicated mAs value in the test protocol.
5. Remove the reference IP cassette.
6. Position the ionization chamber inside the cassette compartment above the AEC detector.
7. Manually select (on the control panel of MAMMOMAT 3000 Nova) the mAs value that is closest to the measured AEC mAs value and use it during the following measurements (with AEC mode disabled).
8. Make an exposure with 28 kV and Mo/Mo.
9. Read the dose from the ionization chamber and record the value in the test protocol. The image detector dose shall not exceed 100 μGy (10mrad), the recommended dose is 70 μGy.

Reinstall/Install program parameters for OPDOSE

NOTE	**If OPDOSE shall be used for the IP cassettes, the following steps must be done.**

1. If the system is ON and the service program is running, go to step 4, else go to step 2.
2. System ON.
3. Start up the service program.
4. In **Mainmenu** select **Configuration > Miscellaneous > Panel programming**. The panel program switch must be ON. Save with F2.
5. In **Mainmenu** select **Configuration > Miscellaneous > Auto limits**. Make sure the values are Program 1 30 mm, Program 2 45 mm and Program 3 60 mm or the values desired by the customer. Change if needed and then save with F2.
6. Set kV (1/Fig. 6), density (2/Fig. 6), H/D (3/Fig. 6) and anode/filter combination (4/Fig. 6), for one of the programs according to the test values previously noted in the protocol, except density correction which should be set to 0.
7. Save the program parameters if needed by pressing the store button (6/Fig. 6) and then the program button (5/Fig. 6). Keep both buttons pressed until the program button stops flashing (approximately 5 s). Repeat the procedure in step 5 to 6 for the remaining programs.

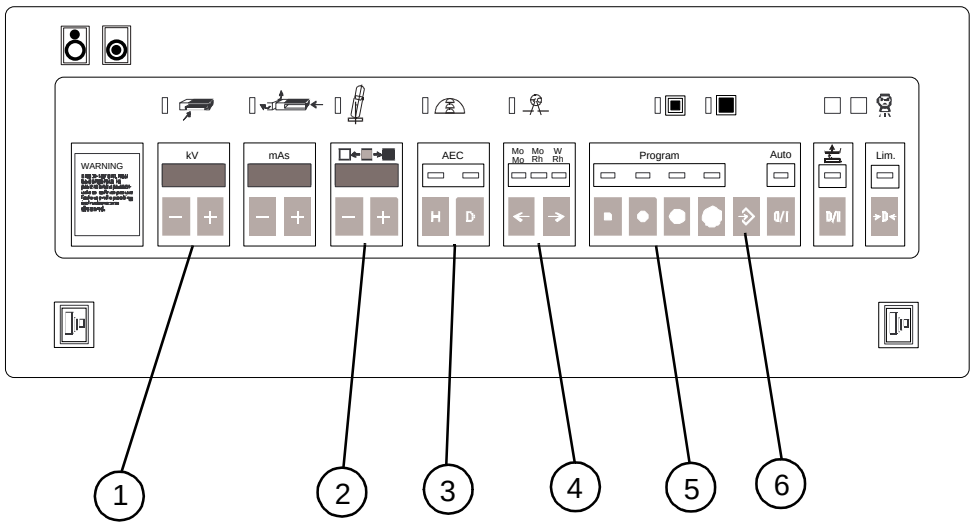


Fig. 6

Factory settings

Changes can be made with the service program (Configuration, Miscellaneous, Auto limits).

Thickness	kV	Anode/filter combination
≥ 61 mm	26	W / Rh
46 - 60 mm	27	Mo / Rh
31 - 45 mm	27	Mo / Mo
0 - 30 mm	26	Mo / Mo

Fig. 7 Installations with filter disc Mo 0.030 / Rh 0.025 / Rh 0.050

Thickness	kV	Anode/filter combination
≥ 61 mm	28	Mo / Rh
46 - 60 mm	27	Mo / Rh
31 - 45 mm	27	Mo / Mo
0 - 30 mm	26	Mo / Mo

Fig. 8 Installations with filter disc Mo 0.030 / Rh 0.025

Testing OPDOSE

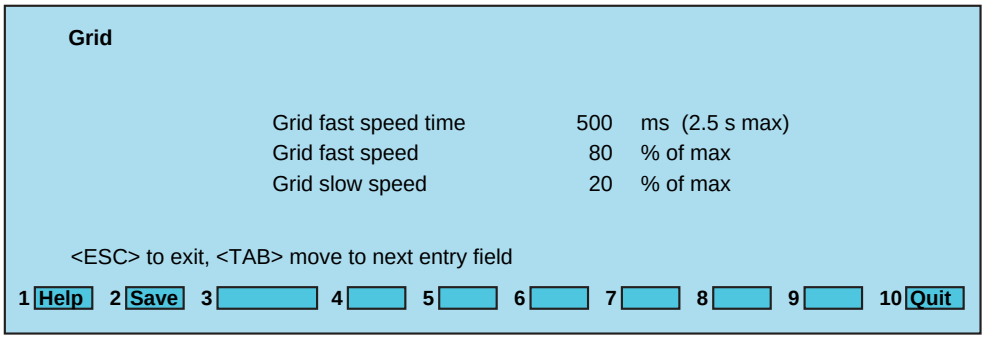
1. Mount an 18x24 cm compression plate to the MAMMOMAT 3000.
2. Select a thickness of AEC calibration plexi (material No. 65 61 224 and 65 61 232), that is within the thickness interval of the program to be tested. The thickness intervals can be found in **Mainmenu > Configuration > Miscellaneous > Auto limits**. For more information about Auto limits, see Chapter “Miscellaneous -> Auto limits” in the service manual “Service Program” for MAMMOMAT 3000.
3. Select AUTO on control panel.
4. Place the AEC calibration plexi on the object table in question and compress to 6 kg or more.
5. Check that the correct program is blinking on the control panel. Select the program by pressing the corresponding program button on the control panel.

6. Perform an examination according to "Examination" on Page 8 - 1, use the BREAST, L (DSR) exposure menu from the BREAST task card.
7. Register the AD Value (Average pixel value for the area of interest) that is displayed in the AECImageExtract window at the service PC.
8. The AD Value shall be as close to 400 as possible (or the density preferred by customer). If necessary adjust density correction on control panel. Save by pressing the store button and then the program button. Keep both buttons pressed until the program button stops flashing.
9. Repeat the procedure described in steps 2 to 8 for the other used programs.
10. Note the OPDOSE settings in the attached test protocol.

Final procedures

1. If the service program is running, go to step 7., else go to step 2..
2. Start service PC.
3. Log in (make sure you have administrator rights).
4. Press **Start** and select **Programs > Accessories > Command Prompt**.
5. Type “CD mammomat” and press Enter. Make sure that the new backup floppy is inserted. Type “A:” and press Enter.
6. Start the service program by writing: Service, then press Enter.
7. Activate the DLF switch. In **Main menu** select **Configuration > Miscellaneous > DLF switch**, press space to set switch to ON. Press F2 to save.
8. In **Mainmenu** select **Configuration > Miscellaneous > Cassette loaded check**. Set to ON.

9. Reduce the grid speed. In **Main menu** select **Configuration > Grid speed**. Set the following values. Press F2 to save.


Grid
Grid fast speed time 500 ms (2.5 s max)
Grid fast speed 80 % of max
Grid slow speed 20 % of max
<ESC> to exit, <TAB> move to next entry field
1 Help 2 Save 3 4 5 6 7 8 9 10 Quit
MAM00762

10. In **Main menu** select **Service > Copy error buffer to file**.
11. Take the backup to hard disk: **Backup > Copy installation area to disk > All**.
12. Make sure the ***new backup floppy*** is inserted, marked with serial number of system and version of the correction tables (can be found on the AEC floppy disk with material No. 66 01 897).
13. In **Mainmenu** select **Configuration > Save config file**. Press F2 to save.
14. In **Mainmenu** select **Service > Delete error buffer**. Press y to delete.
15. Quit the service program by pressing F10.
16. Type “C:” and press Enter.
17. Type “COPY *.TXT A:” and press Enter.
18. Check that the following backup files are stored on the floppy disk (by typing “dir a:”, then pressing Enter):

    - a_backup.txt for AEC parameters
    - s_backup.txt for stand parameters
    - p_backup.txt for panel parameters
    - momo_h.txt for AEC correction tables
    - morh_h.txt for AEC correction tables
    - wrh_h.txt for AEC correction tables
    - momo_d.txt for AEC correction tables
    - morh_d.txt for AEC correction tables
    - wrh_d.txt for AEC correction tables
    - mammo.cfg for configuration parameters
    - errorbuf.txt for error log
19. Type “DEL *.TXT”.
20. Type “CD..”.
21. Type “RMDIR mammomat”.
22. Mains voltage and system OFF.

NOTE	**Keep all floppy disks in the plastic folder (material No. 61 62 411), which is included in the upgrade kit, with other documentation for the MAMMOMAT in question.**

Restore Service Utility

1. Start the Service Utility according to "Starting the Service Utility" on Page 5 - 1.
2. Press the **Configuration Restore /Backup** button according to Fig. 1.

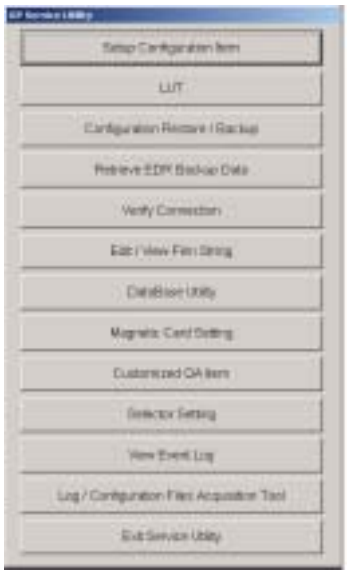


Fig. 1 IIP Service Utility

3. Press the ..... button belonging to **Configuration Restore** according to Fig. 2.

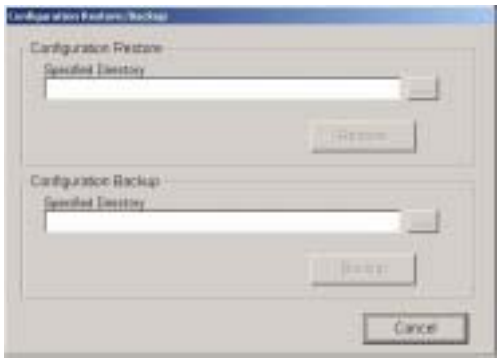


Fig. 2 Configuration Restore / Backup

4. Insert the Service Utility Backup 1(2) floppy in drive A: Choose **A:** from **Drive** combo box and press **OK** button according to Fig. 3.

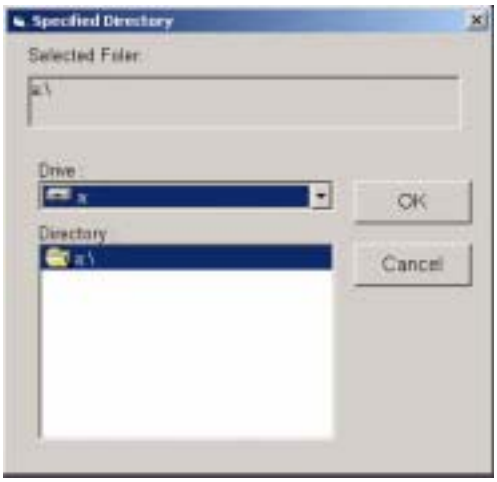


Fig. 3 Specified Directory

5. Press **Restore** button according to Fig. 4. Follow the instructions on the screen.
6. When the restore process is finished for disk 1(2) insert the Service Utility Backup 2(2) floppy in drive A: and press the **Restore** button according to Fig. 4.
7. When the restore process is finished for disk 2(2), press **Cancel** button according to Fig. 4 and press **Exit Service Utility** button according to Fig. 1.

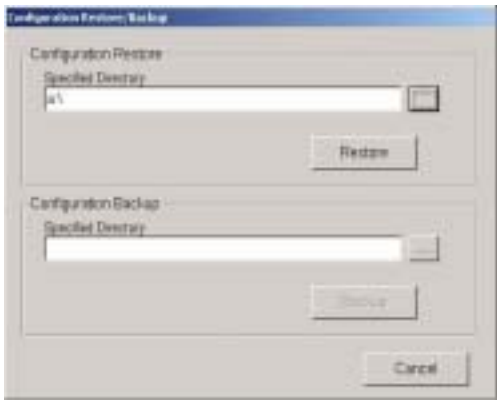


Fig. 4 Restore Service Utility

Restore User Utility

1. From the Start menu, sequentially choose **Programs > Fuji Film > FCR** to start the Fuji CR Application. Enter the User Utility according to Fig. 5.

Fig. 5 Enter User Utility

2. Press **OK** button in the **Enter Password – User Utility** window, without entering any password, according to Fig. 6.

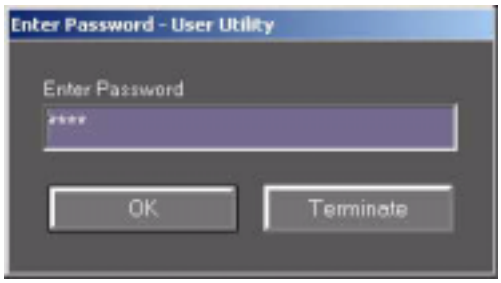


Fig. 6 Enter Password – User Utility

3. Press **Restore** button according to Fig. 7.

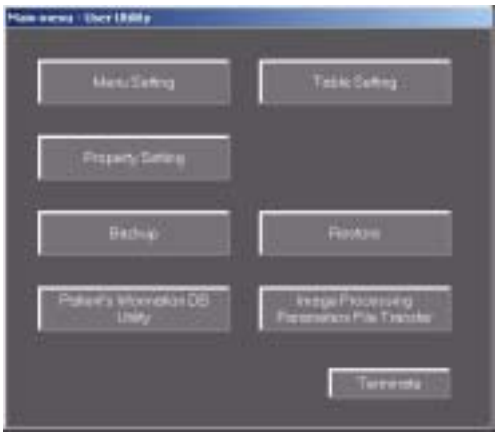


Fig. 7 Main Menu - User Utility

4. Insert the User Utility Backup 1(2) floppy in drive A:. Mark all four check boxes and press **Start** button according to Fig. 8. Follow the instructions on the screen. When the restore process is finished, press the **Terminate** button according to Fig. 8, Page 5 - 4 and **Terminate** button according to Fig. 7.

Fig. 8 Restore – User Utility

- Remove the service PC.
- Restore the network connection.
- Attach the enclosed labels on the MAMMOMAT label plate according to Fig. 1.

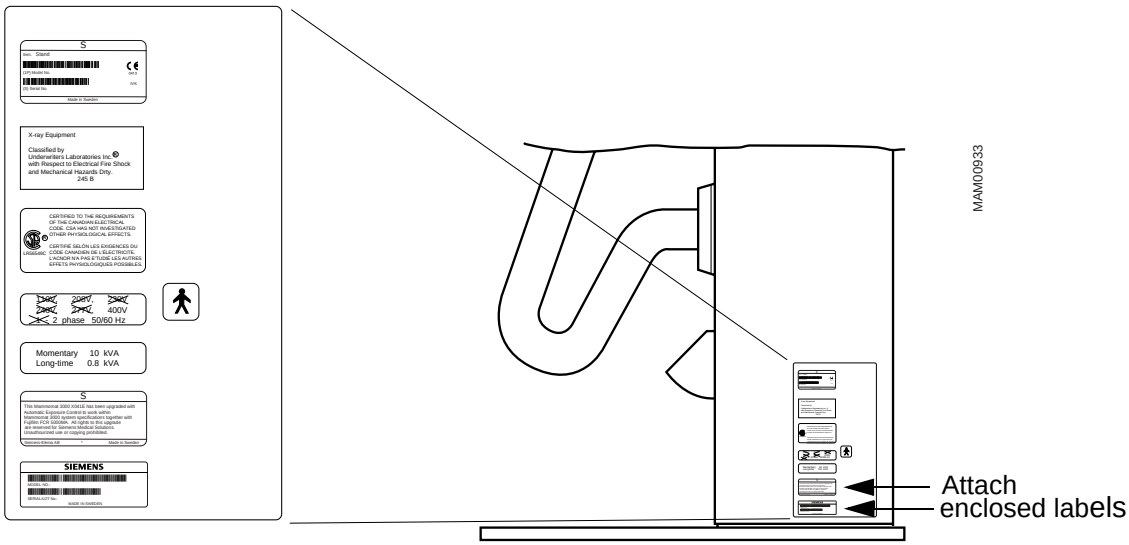


Fig. 1 Attach labels

- Fill in the IVK list or report the IVK components to your responsible uptime service center (USC).
- Make sure the "Start-up protocol" on Page 12 - 1 is completed.

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MAMMOMAT Serial number .....

Fuji FCR 5000MA Serial number .....

Name of installer .....

Installation date .....

Backup of existing system

Use these two protocols with the instructions in "Preparation of backup floppy" on Page 9 - 4 and onward.

Anode	Power (kW)
Large focus Mo	
Large focus W	
Small focus Mo	
Small focus W	

The customer’s own OPDOSE settings:

Program buttons	kV	Density correction	speed button H	anode/filter combination	Breast thickness

AEC performance test

To be performed for the object tables, wings, and speeds in question.

*Should error codes Er013 or Er450 appear; change to AEC calibration plexi which is 1 cm thinner.

	IP		Cassette	
	Manufacturer	Type	Manufacturer	Type
D	Fuji	CR HR-BD	Fuji	IP CASS-BD M

Wing 1 M3000, Wing 2 M1000

For applicable anode/filter combinations.

Grid Table 18x24 (Bucky)		mAs	AD Value
Mo/Mo	25 kV, 6 cm plexi*		
Mo/Mo	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Grid Table 18x24 (Bucky)		mAs	AD Value
Mo/Rh	26 kV, 6 cm plexi*		
Mo/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Grid Table 18x24 (Bucky)		mAs	AD Value
W/Rh	25 kV, 6 cm plexi*		
W/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Magnification Table		mAs	AD Value
Mo/Mo	25 kV, 6 cm plexi*		
Mo/Mo	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Magnification Table		mAs	AD Value
Mo/Rh	26 kV, 6 cm plexi*		
Mo/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Magnification Table		mAs	AD Value
W/Rh	25 kV, 6 cm plexi*		
W/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Wing 2 M3000

Grid Table 18x24 (Bucky)		mAs	AD Value
Mo/Mo	25 kV, 6 cm plexi*		
Mo/Mo	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Image detector dose

Cassette No.:		
IP No.:		
mAs measured ("AEC mAs"):		mAs
Image detector dose:		μGy

The image detector dose shall not exceed 100 μGy, the recommended dose is 70 μGy.

OPDOSE settings

Use this protocol with the instructions in "Testing OPDOSE" on Page 7 - 29.

	kV	Density correction	Speed button (H or D)	Anode/filter combination	Breast thickness	AD Value
●						
●						
●						
●						

Ping Network fails

- Verify that the network cable between the service PC and the switch is connected.
- Verify that the right information is used when creating new network nodes.

Verify Connection fails

- Verify that the AECImageExtract application is installed in path C:\AECImageExtract\.
- Verify that the AECImageExtract application is running on the service PC.
- Verify that the right information is used when creating new network nodes.

No images are transferred to the Fuji CR Console

- Verify that the network cable between the Fuji FCR 5000MA and the switch are connected to the same network socket in the reader as the ordinary cable, and that the other end of the cable is connected to the switch.
- Verify that the AEC Calibration exposure menu and property setting has been correctly performed.

The AEC Calibration exposure menu does not appear in the exposure menu

Verify that the AEC Calibration exposure menu has been correctly performed.

If any other problem occurs, please refer to the AT-FS705 Series Installation Guide, Fuji FCR 5000MA Operation Manual, Fuji CR Console Operation Manual or the local Fuji office.

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Page	Chapter	Change
9-6	Calibration conditions	Text is new.
9-13	Calibrate correction tables	Second note is new.
9-15	Calibrate correction tables	The note is rewritten.
9-17	Sensitivity correction (fine setting)	New note in step 4.

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